

# **SYSTEM, METHOD, AND COMPUTER PROGRAM PRODUCT FOR PROGRESSIVE QUERY PROCESSING**

## **ABSTRACT**

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A method, system, and computer program product to make query processing more robust in the face of optimization errors. The invention validates the statistics and assumptions used for compiling a query as the query is executed and, when necessary, progressively re-optimizes the query in mid-execution based on the knowledge learned during its partial execution. The invention  
10 selectively places a number of CHECK operators in a query execution plan to validate the optimizer's cardinality estimates against actual cardinalities. Errors beyond a threshold trigger re-optimization, and the optimizer decides whether the old plan is still optimal and whether to re-use previously computed results. The invention addresses arbitrary SQL queries whose plans can contain sub-queries, updates, trigger checking, and view maintenance operations. The invention can  
15 handle concurrent update transactions or updates of common sub-expressions in a query execution plan without compromising consistency and isolation as locking information is tied to the record ID.